

supplying bias power, and means for radiating a high frequency electromagnetic wave within said vacuum vessel, wherein said processing gas is made plasmatic and plasma is generated for use in performing processing of the sample to be processed, wherein said means for radiating a high frequency electromagnetic wave comprises an antenna which is provided within said vacuum vessel, said antenna including a circular plate-shaped conductor opposing said lower electrode and being connected to a high frequency bias power supply, and a plate contacted with said circular plate-shaped conductor, and wherein said vacuum vessel includes a process chamber with a [sidewall,] side wall, and a temperature controller which controls a temperature of said side wall [being under temperature control] for forming on an inner wall surface thereof a coating film similar in composition to the processing gas used during etching treatment.

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2. (amended) The plasma processing apparatus according to claim 1, wherein said temperature controller subjects said side wall [is subjected] to temperature control due to circulation supplement of a [heating] heat exchange medium from a [heating] heat exchange medium supply means.

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4. (amended) A plasma processing apparatus including a vacuum vessel as evacuated by an evacuation system, gas supply

means for supplying a processing gas into the vacuum vessel, an electrostatic chucking device for holding thereon a sample to be processed within said vacuum vessel; a lower electrode, a bias power source connected to the lower electrode for supplying bias power, and means for radiating a high frequency electromagnetic wave within said vacuum vessel, wherein said processing gas is made plasmatic and plasma is generated for use in performing processing of the sample to be processed, wherein said means for radiating a high frequency electromagnetic wave comprises an antenna which is provided within said vacuum vessel, said antenna including a disk-like conductor opposing said lower electrode and being connected to a high frequency bias power supply, and a plate contacted with said disk-like conductor, said plate being spaced apart from the sample by a distance ranging from 30 to 150 millimeters, and wherein said vacuum vessel includes a processing chamber with a side wall, and a temperature controller which controls a temperature of said side wall [being under temperature control] for forming on an inner wall surface thereof a coating film similar in composition to the processing gas used during etching treatment.

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5. (amended) The plasma processing apparatus according to claim 4, wherein said temperature controller subjects said side wall is subjected to temperature control due to

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circulation supplement of a [heating] heat exchange medium
from a [heating] heat exchange medium supply means.

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Please add the following new claims:

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---7. The plasma processing apparatus according to claim 1, wherein said temperature controller controls the temperature of said side wall at a value within a range of 0°C to 100°C.

8. The plasma processing apparatus according to claim 2, wherein said temperature controller controls the temperature of said side wall at a value within a range of 0°C to 100°C.

9. The plasma processing apparatus according to claim 3, wherein said temperature controller controls the temperature of said side wall at a value within a range of 0°C to 100°C.

10. The plasma processing apparatus according to claim 4, wherein said temperature controller controls the temperature of said side wall at a value within a range of 0°C to 100°C.

11. The plasma processing apparatus according to claim